

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An optical amplifier comprising:

an optical waveguide structure through which a signal light wave and pump light wave are propagated, said optical waveguide structure having a core with a relatively high refractive index and a clad with a relatively low refractive index, at least said core exhibiting a nonlinear response of second or third order, to thereby achieve optical parametric amplification of said signal light wave; and

separate idler light filter means (5) for attenuating an idler light, light wave which is generated in the process of optical parametric amplification, said idler light filter means being placed in said optical waveguide structure at a defined-length L_{\max} defined by the difference between power of the pump wave and power of the signal wave, the gain factor of the waveguide, and the absorption of the waveguide

2. (canceled).

3. (currently amended): ~~Optical amplifier according to claim 1~~ An optical amplifier comprising:

an optical waveguide structure through which a signal light wave and pump light wave are propagated, said optical waveguide structure having a core with a relatively high refractive

index and a clad with a relatively low refractive index, at least said core exhibiting a nonlinear response of second or third order, to thereby achieve optical parametric amplification of said signal light wave; and

separate idler light filter means (5) for attenuating an idler light wave which is generated in the process of optical parametric amplification, said idler light filter means being placed in said optical waveguide structure at a defined length L_{\max} ,

where the length L_{\max} is

$$L_{\text{eff max}} = \frac{P_{po}(\text{dB}) - P_{so}(\text{dB}) + 3}{\frac{10}{\ln(10)} 2g - \alpha(\text{dB/km})}, \text{ and where}$$

P_{po} is pump power, (dB) in logarithmic ~~units~~units,

P_{so} is signal power,

$g^2 = (\gamma P_{po}(W))^2 - (\kappa/2)^2$ is the gain ~~coefficient~~coefficient,

γ is the waveguide nonlinear coefficient,

κ is the phase matching ~~term~~term, and

α is waveguide attenuation

4. (currently amended): ~~Optical~~ The optical amplifier according to claim 1 ~~where 1,~~
wherein the filter ~~reduced~~ reduces at least 50% of the power of the idler wave.